## What is claimed is:

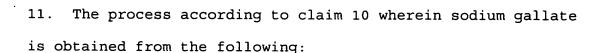
- 1. An additive for an aluminum based semi-fuel cell system comprising:
  - a combination of components including gallium, oxygen, and a sodium component, said components preventing formation of an oxide layer on a surface of an aluminum anode in an alkaline electrolyte of said semi-fuel cell system.
- 2. The additive according to claim 1 wherein said combination of components is dissolvable in the alkaline electrolyte.
- 3. The additive according to claim 1 wherein said combination of components is sodium gallate.
- 4. The additive according to claim 3 wherein sodium gallate is obtained from the following:

sodium oxalate + gallium oxide <u>1200°C</u>, sodium gallium oxide + carbon dioxide.

5. The additive according to claim 1 wherein the alkaline electrolyte of the semi-fuel cell system includes a reaction

of aluminum with an alkaline solution such as sodium hydroxide.

- 6. The additive according to claim 5 wherein the aluminum is elemental aluminum.
- 7. The additive according to claim 5 wherein the aluminum is an aluminum alloy.
- 8. A process for preventing formation of an oxide layer on a surface of an aluminum anode in an aluminum based semi-fuel cell system comprising the steps of:
  - (a) forming an alkaline electrolyte solution in an anode compartment of said semi-fuel cell system; and
  - (b) introducing a combination of components including gallium, oxygen, and a sodium component into said alkaline solution.
- 9. The process according to claim 8 wherein said combination of components is dissolvable in the alkaline electrolyte.
- 10. The process according to claim 8 wherein said combination of components is sodium gallate.



sodium oxalate + gallium oxide <u>1200°C</u>, sodium gallium oxide + carbon dioxide.

- 12. The process according to claim 8 wherein the alkaline electrolyte of the semi-fuel cell system includes a reaction of aluminum with an alkaline solution such as sodium hydroxide.
- 13. The process according to claim 12 wherein the aluminum is elemental aluminum.
- 14. The process according to claim 12 wherein the aluminum is an aluminum alloy.